

AVIATION WEEK

A MCGRAW-HILL PUBLICATION

AUGUST 9, 1948

BG spark plugs fly

from New York to the Congo

with

SABENA Belgian Airlines

Modern airliners, cruising at 300 miles an hour, span the trans-Atlantic route from New York to Brussels for SABENA* Belgian Airlines. The same high-speed airliners fly from Brussels to Leopoldville, capital of the Belgian Congo, and from Leopoldville to Johannesburg in the Union of South Africa. In this long-distance service, BG Spark Plugs are again demonstrating their well-known dependability.

*Société Anonyme Belge d'Exploitation de la Navigation Aérienne.

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Soaring upward into the heights of 45,000 pounds of thrust, powered by its 8 jet engines and 73 A-1000 model turbo, the Boeing B-29 Stratojet represents one of the most modern developments in the field of long-range bombers. The new Boeing B-29 Superfortress, in the foreground, is the successor to the famed Boeing B-29 and is the U.S. Air Force Strategic Air Command's new strategic long-range bomber.

Successor to the B-29... First bomber made plane with sweptback wing... 42,000 pounds of thrust... 73% a new airplane, boasting hundreds of design achievements which have greatly increased performance. Please like these tell the story of continued progress in designing and building more efficient aircraft—the never-ending search for a still better design, a still better product.

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Refueling Future

Only the surface of the Air Force's aerial refueling plans has been scratched. Air Marshal Command is studying Capt. David Semons, who has been refueling his well-known "single-point" refueling system at Wright-Patterson field for seven years, and a crew is flying a specially-equipped Boeing B-29 around the country to demonstrate the new system to all major airbase state leaders.

Purpose of the classroom session station, complete with models, is to acquaint contractors personnel with the details of the system so that their future aircraft design proposals will incorporate the single-point aerial refueling system. Air Force has made definite plans to provide all future aircraft with single-point refueling systems both to spend ground time spent in refueling and to permit aerial refueling.

Footnote on Berlin

As the Berlin airlift ebbed steadily to a level of 3154 tons daily last week, RAF and USAP transport aircraft were hard pressed to make up the additional tonnage required to meet the 4500 ton goal recently set by Gen. Lucian Clay, Military Air Transport Service was forced to scuffle to do last-minute transport aircraft service and its U.S. sister serving domestic. North is its plan to put in extra squadrons of C-54s into the Berlin transport pool.

Meanwhile Navy is stepping over the side assigned its moves in the MAES effort and the steady reinforcement in using the Air Force squadrons in Europe. Navy's own and plans taken off the half-contingent and U.S. routes have been put on the north-African route again only as far as Frankfurt while USAF comes from the Atlantic division on the Frankfurt-Berlin run.

Air Force's own and Railroad as well as the Air Force squadrons were made to operate into Berlin at the Joint Chiefs of Staff (JCS) request. Nothing but silence has come from the JCS and Air Force.

Martin Urges Coalition

Class 1. Martin Eshel as under light on the Congressional Aviation Policy Board's prototype development bill, sponsored in the House by California's CDP Rep. Carl Hays, and in the Senate by Moore's GOP Sen. Owen Brewster.

NEWS SIDELIGHTS

Washington Chaff

► Unlikely of a call on the surface the line between Air Force Secretary Spangenberg and Defense Secretary Forrestal is still uneasy during security.

► Not in working in line with the Republican administration anticipated next year. Admiral Louis Denfeld, chief of Naval operations, recently conferred with vice president's assistant Earl Warren at Sacramento, Calif.

► Hardest spot in Washington is the new legislative job in the "strong money" establishment aimed at coming out into service over before they hit Congress. Maj. Gen. William Parsons of the Army got the job with three co-sponsors. Maj. Gen. James D. McInerney, one of the Air Force's top aircraft generals, Brig. Gen. Miles Ketter of the Army and Capt. Ira H. Mann of the Navy. Parsons is a long-time campaigner for making aircraft work.

► Appointment of unattached Maj. Gen. Louis Johnson to command Boeing B-29s in England underscores the fact that "strong money" may not be ready for Congress. Johnson, like Lt. Gen. Gen. Curtis LeMay now commanding the USAF in Europe, is noted for his usual leadership. Johnson has been in the Congress since 1940 as the first B-29 pilot and later was a heavy bomber commander in combat over Germany.

Martin's caution signal came after the passage, with broad-based support of manufacturing and airline interests and government engineers, had passed through the House and appeared set for quick Senate approval in the special session. Martin had American Ways, he wanted the "fall report" of the manufacturing and transport industries carefully scrutinized before the bill's passage could be made. He doubted that down-on-concrete effort, concentrated on aircraft plant development in the few firms selected for government-financed projects.

Martin issued the bill "poorly and hastily drafted." He said it "does not begin to meet the needs either of the aviation industry or of the country for research." Furthermore, it neither treats

the manufacturing industry contribution fairly. "After Martin's signal there was evidence of some cooling in the industry to coordinate enactment of the proposal."

Aircraft Industries Association's opposition, Ben Goetz, reported that about among manufacturers to let it go over until next year. This would provide time for working out production changes and meeting other industry differences—if possible. (See the complete story, see page 33.)

Top Secret Report

Stanford Research Institute's top secret report on the expandability of the aircraft industry has been delivered to Defense Secretary Forrestal. The Stanford University study group was headed by William B. Gidson who was formerly director of aircraft requirements for the Army Air Force during World War II.

The Stanford study also included an evaluation of the Air Force B-36 program as a keypoint in the industry and a special study of the entire aircraft industry field.

Brazilian Tim

Look for a steady tightening of relations between the United States and Brazil.

Saying of a U. S. Brazil agreement to send U. S. Air Force officers to Brazil to help set up a Brazilian War College, perhaps a similar unpublicized development in civil aviation. Both military and civil aviation of Brazil will be patterned after U. S. standards and should provide a good long-term support for aviation equipment of all types.

VA Chiefs Grilled

Top Veterans' Administration officials were grilled last week by a House Appropriations Committee subcommittee on GI flight training last week. The committee was chaired last week by a member of the subcommittee in a session to lead parties on the way the VA has spent GI flight training. Veterans since Congress approved vocational flight training for veterans. A better deal in the regional VA office for veteran working flight training, may be the net result of the session. Reports from the subcommittee indicate that a single veteran has been approved for flight training by regional VA officials since the July 1 deadline.

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NEWS DIGEST

DOMESTIC

Sen. Glen Taylor (Vt., Mt.) has introduced a resolution calling for termination of all government contracts with Boeing, Aerospace Co., until the law settles its dispute with the International Association of Machinists.

U. S. Court of Appeals has upheld a CAB decision of last December rejecting TWA's claim for \$11,177,000 in retroactive and per which the carrier sought to cover losses between Jan. 1, 1946, and Mar. 14, 1947.

The Army has authorized a contract with Johns Hopkins University, Baltimore, for establishment of a general research office to develop gradual analysis and other new weapons.

FINANCIAL

Monette Chemical Co. and its domestic subsidiaries reported net income of \$7,606,719 for the six months ended July 1. The net profit's \$1.73 a share and compares with \$1.75, \$1.11 and \$2.21 a share in the first half of 1947. Net sales rose from \$73,695,736 to \$78,739,148.

Cleveland Graphite Broom Co. reports sales of \$15,977,371 and net profit of \$1,098,155 for the first half of 1948. Profit on the common share is \$1.61 after preferred dividends. In the previous six-month period, sales were \$12,584,135 and profits \$523,441, or \$1.27 per common share. Two 40-cent dividends were paid on common stock in the first half of 1948.

Canadian Ltd. has a backlog of about 530 million following receipt of the British order for 71 DC-4Bs, its parent Electric Boat Co. reports. In the six months of the year, Canadian sales totaled \$28 million.

FOREIGN

Air France provided six six-engine Lockheed Constellation aircraft for one of the 70-ton craft carrying 52 persons disappeared as a flight from Marseilles, French West Indies, to Port-au-Prince, French West Indies.

U. S. and Mexico have signed an agreement at Mexico City. Mexico is complete such a pact has prevented Brazil Airways, Western Air Lines and Eastern Air Lines from securing new routes to Mexico which were anticipated in CAB's Latin American decision in the spring of 1948.

Australian Cabinet has decided that 10 Australian Air Force C-47s with crew will be made available to assist in the air lift to Berlin if Great Britain requests such assistance.

KOHLER QUALITY



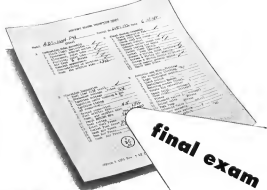
IN AIRCRAFT PRECISION PARTS

The quality workmanship and reliability associated with the name "Kohler" have been demonstrated anew by the acceptance of Kohler precision parts by leading aircraft manufacturers and the Army and Navy Air Forces. The stainless steel Hydraulic Cone Check Valve shown bears the Army-Navy "yellow dot" — proof that it has passed the official tests required for qualification under combat conditions. All Kohler valves and fittings manufactured under the "approved" rating of the Army Air Forces.

Prompt service is assured by the fact that Kohler maintains within one plant, full facilities for die-casting brass, aluminum or white metal, sand-casting, forging, machining, plating and anodizing. The Kohler line includes many types and sizes of precision parts. Where special requirements exist, Kohler engineers will welcome the opportunity to develop valves or fittings specifically designed to meet them. Kohler quality is a 75-year-old tradition. Send for copy of Catalog K, Kohler Co., Kohler, Wisconsin.

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS



in the Janitrol "school of hard knocks"



Every single Janitrol aircraft engine virtually goes to flying school, and must pass over 200 tests, before it goes out into the cold world. It's a tough course! 67 of the tests are listed on the above form; 27 of these are operational, done on benches where the engines, you might say, are "checked out" under conditions that come mighty close to and in most cases exceed actual operating conditions. . . . Is it any wonder, then, that you'll find Janitrol engines serving on most airlines, on such aircraft as the DC-3, DC-4, DC-6A, DC-48A, and DC-6—Cometliners, Models 640, 640, and 740—F7E, F8C—P-51—TBM—SBAC—A-26—C-46, C-54, C-74, and most recently, on the C-119 Packet. Any wonder Janitrol engineering representatives are consulted so frequently on standard and special testing problems for military and commercial aircraft?



Janitrol
AIRCRAFT-AUTOMOTIVE DIVISION • SURFACE COMBUSTION CORPORATION, TOLSON, OHIO

AIRCRAFT and AUTOMOTIVE ENGINES
with the whirling flames

Two Boards to Direct Renegotiation Act

Five-man teams of USAF and Navy will be subject to review by three-man board.

Plans for administering the Renegotiation Act of 1948 began to emerge in Washington last week.

Assault contractors and subcontractors will deal principally with two five-man renegotiation boards, one for the Air Force and the other for the Navy. Each board will handle contracts dealing with its particular service except where joint procurement projects are in effect. The Army will also have a board but it will be of little concern to the aircraft industry. Personnel for these three boards has not yet been picked.

Renegotiation Board—Chairman of the three service renegotiation boards will act in a top level military renegotiation policy and review board functioning directly under Defense Secretary Forrestal and working all his activities as renegotiator.

Plan is for the three service boards to handle all renegotiation dealings with contractors with the policy and review board establishing basic policy and setting up rules, on appeals by contractors, from service board decisions. Review board decisions can be

appealed to Federal tax courts.

The policy and review board will also assign contractors to one of the three service boards for renegotiation proceedings and determine service contractors where joint procurement projects are involved.

The policy and review board will also have authority to exempt contractors and subcontractors from action on all portions of the act and to order the books and records of one contractor subject to the act. This board will submit semi-annual reports on its activities beginning next January.

Advisory Groups—the Renegotiation Act now divides all contracts and subcontracts of more than \$100,000 on which is renegotiation if a firm's annual gross business under these contracts is more than \$100,000 for a fiscal year. All military aircraft procurement contracts and subcontracts agreed to after Nov. 21, 1948, are included in the act.

A special committee consisting of Undersecretary of the Air Force (Arthur Burdick), the Navy (John L. Lewis) and Army (Gordon Gray) has been

preparing tentative regulations governing renegotiation procedures for Defense Secretary Forrestal. Final regulations will not be issued for some time. They will be published eventually in the Federal Register and be available from the Superintendent of Documents, Washington 25, D. C.

Revised Policy—Generally speaking, the rules and regulations set out in the Renegotiation Act of 1948, intended to apply to the present economic trends, will be used in administration of the new act in the military.

In determining what portion of profits in a renegotiable contract should be awarded, the military believes the government should not get more receipt below the \$100,000 floor. In addition, expenditures under \$10,000 are not considered worthwhile.

Under the proposed regulations all orders of military aircraft and any component thereof, supplies of plane and parts manufacturing and makers of machinery used in making an end product and as result in component manufacture are all subject to renegotiation. Contractor reports will be required annually within six months after the end of each fiscal year.

Proposed Renegotiation—Renegotiations are proposed for all contracts prior to May 21, 1948, two-exception charitable



XB-46 ON DELIVERY FLIGHT

New view of the Martin XB-46 shows the six jet boosters in tailfin from Martin Airport, Baltimore, Md., on its delivery flight to the Air Force. With tail plane now completed by Martin test pilots, only a nose at Wright Patterson Field, Ohio, for the final phase.

weapons and government institutions, and subcontractors at a price as often subcontracted that is exempt. In addition, the Secretary of the Army, Navy and Air Force and the Policy and Review Board have authority to exempt individual contractors from provisions of the act.

In detailing how machinery and allied-product manufacturers come under the proposed regulations, personnel experts explain that a contract or subcontract for a machine or machine is negotiable if that item is used:

- To produce or otherwise operate directly, as an end product or as an article substituted in its use, by chemical, physical or mechanical methods such as shaping, cutting, constructing, combining, fitting, assembling, fitting, inspecting, or in the case of the end product, packaging.

- This includes not only such machinery as rolling mills and machine tools, but also gauges and other measuring instruments, fixtures and elements or other materials consumed in the course of the manufacturer's manufacturing process.

- To transport within the contractor's plant or end product as article incorporated in it, or as other articles used in connection with production, including such items as fixtures, tracks, and traveling cranes.

- In connection with the repair, maintenance, equipping, or operation of the contractor's plant or machinery or equipment used in production, including repair parts, auxiliary tools, alterations, switches, saws, drills, hand tools, or equipment located in the tool room of a contractor's plant, and special equipment used for the maintenance, preparation or maintenance of tools, dies, jigs, fixtures, equipment or various machines.

- Worked House.—The military intends to exclude from registration the sale of articles which contribute only indirectly to the actual manufacturing process. These items would include products used for general plant maintenance, fuel, power, and general office equipment and supplies, utility equipment, and clothing.

It does not intend to exclude any articles used by a contractor when the items are ultimately to be sold to the government either as end products or components.

Chinese Suspended

Two major Chinese Airlines, Central Air Transport Corp. and China National Aviation Corp., suspended all passenger movements from Shanghai last month, blaming high cost of operations and particularly the price of gasoline.

Piston Engine Boosted to 4000 Hp.

Both Wright and Pratt & Whitney powerplants promising startling low fuel consumption.

A new future for the improving engine, evolved through a racing with the gas turbine, is promising to a series of new long range bombers and patrol planes.

The compound engine, a conventional reciprocating engine with gaseous turbine, has passed its preliminary ground and flight tests and is already in limited quantity production by Wright Aeronautical Corp. and Pratt & Whitney Aircraft division, United Aircraft Corp.

First important production article, one of the compound engines will be the Boeing B-50C developed by Pratt & Whitney, B-50C-6150-VDT engines developing 4000 hp. for aircraft and rated maximum at 1030 hp. at 30,000 ft.

Although that additional power will increase the top speed of the B-50C to 460 mph., a 15 percent improvement, the major strategic value of the new installation lies in greatly reduced fuel consumption which will stretch the B-50C's range to the vicinity of 39,000 miles. That is a distance formerly the exclusive capability of the so-called "jet" bombers.

Long range capabilities must, however, go hand in hand with the ultimate Boeing installation but basic engine tests have proved the practicability of a 20 percent consumption reduction over the standard B-50C engine.

■ New Engine—Pratt & Whitney's compound engine application will be the Lockheed XP7V-4, an improved version of the existing "record holder," "Tomb Raider," which already has flown 111,735 miles with standard reciprocating engines. The new Neptune version will be powered by two Wright Cyclone-18 compound engines developing 1150 hp. for an aircraft and rated 1500 hp. for 30,000 ft. operation.

Nonmilitary studies have been completed and plans are well advanced for

other installations including Northrop B-35 (B-35 VDT), Lockheed X-40 (Wright 110), and North American X-41 (Wright 110). Studies have also been made of new bomber and search aircraft proposals designed specifically for compound engine installations in aircraft.

Reichen Energy—Compounding a gas turbine with a reciprocating engine grew out of the need for reducing some of the energy wasted in the Otto cycle reciprocating engine. As high as 65 percent of the fuel energy supplied to the reciprocating engine is lost in the form of unavoidable heat.

Although only a small portion of this loss can be recovered by recuperating, the gains in engine power and reduced fuel consumption are great "yields" in the energy balance of the machine. About 38 percent of the total fuel energy is wasted through the engine exhaust and about 23 percent of that can be converted to useful work through recuperating.

The idea for the compound engine was a natural development of the turbo-supercharger, which was only a small portion of the available energy in the engine exhaust stream. In carrying on for the turbocharger. The rest of the energy is dissipated outward through the waste pipe. Engineers only use the potential benefits of putting the turbo-supercharger back into the engine manifold where the waste energy would be utilized to "drive" the recuperating engine.

■ New Engines—During the war, for engine development conducted by Pratt & Whitney development contracts and the first successful compound engine was the Allison V-1710-112, a development of the standard Allison liquid-cooled design. This principle proved very advantageous due to pressure on the Allison staff for instant and turbo-prop engine production. The Wright and Pratt & Whitney groups were confined to their present production shop.

The National Advisory Committee for Aeronautics was called into the program shortly after V-1 Day to provide fundamental data on engine recuperating. The program has been steadily expanded at the NACA Flight Propulsion Research Laboratory, Cleveland, Ohio, and it is now a major research project. It has been largely on the basis of NACA studies that the full potential of the compound engine has been revealed and Air Force and

Navy development projects commenced.

■ Low Fuel Consumption Term—These NACA studies indicate that a specific fuel consumption as low as 0.15 lb. fuel per hp. per hr. can be obtained at sea level at cruise power at an air speed of about 100 mph. This means that even the huge Pratt & Whitney Wasp Major engine would use only 30 gal. of fuel per hr., compared to the more than 300 gal. per hr. it presently uses at cruise speed.

The reduced fuel consumption would literally mean that triple the range of an aircraft, or reduce its cost per mile to less than one-third. At a cruising speed of 400 mph., and by the B-50C, the fuel consumption of the compound engine is about 0.10 lb. per hp. per hr., a 30 percent reduction permitting an equivalent range increase.

Development problems of the compound engine have proved complex and early and it is certain that the engine would not have been developed without military endorsement of the project. The same groundswell and gas turbine problems are inherent in the compound engine as are present in the turbo-prop engine, since the turbine speed must be geared down to engine speed, turbine inlet temperature held to limits decremented by materials, and high-efficiency ducting developed.

■ Major Problem—One of the major problems has been the distance of work between the engine and the turbine, the ultimate in efficiency being obtained after all the work is done by the turbine with the recuperating engine acting as a compressor and combustion chamber for the turbine, as in

the turbo-prop and turbo-jet engines. Present compound engines utilize about 75-85 percent turbine power and 15-25 percent engine power.

Pratt & Whitney engines are currently in development concerning essentially an additional unit (three on basis of the Wright engine, one on the Pratt & Whitney engine) to a standard reciprocating engine. These engines operate at a brake mean effective pressure of from 115 to 220 lb. per sq. in. and compression ratios of 67-90. The compound engines must operate at considerably higher BMEP to attain efficiency. This means that considerably stronger pistons, cylinders, bearings and crankshafts must be developed before the full potentialities of the design can be realized.

One of the major advantages of the compound engine is that it can operate efficiently at comparatively low pressure ratios (just enough to compress the intake air to a pressure of 6.95 to 12.5 times) and in perfect design. In contrast, the ratio necessary to obtain power but decrease engine power (however, maximum fuel economy is obtained at a higher pressure ratio) is about 15 to 20 times.

The compound engine operates most efficiently at comparatively low altitude and speed, achieving its best fuel economy at 30,000 ft. it achieves speed of 200 mph. Higher altitude and speed necessitate high fuel consumption and losses at power output. The engine has a basic installed weight that is considerably lighter than a conventional engine which necessitates its operation over the flat 7-5000

miles is costly. Above the 15,000 mile range the compound engine may disadvantage the lowest fuel consumption of any internal combustion machine yet built.

CAB Decides In Favor of C&S

Chicago & Southern Air Lines has its Kansas City, Mo. Memphis Tenn., route lost again.

By a vote of two to one, CAB has ruled in its decision of last September favoring the bid to C&S and has withdrawn an order which temporarily prohibited the carrier from activating the new route.

In a dramatic opinion, CAB Chairman Joseph P. O'Connor, Jr., and Member John Lee and they believe Mid-Continent Airlines rather than Chicago & Southern should be awarded the Kansas City-Memphis route.

Consistent with the supplemental opinion, CAB's currently initiated an investigation as the feasibility of establishing equipment interchange to provide a single place across through the St. Louis gateway between what is Mid-Continent's system and northeastern cities served by Eastern Air Lines, as through the Memphis gateway from cities on MCA and C&S routes to southeastern cities on Delta's or Eastern routes. The Board also plans to consider establishment of through, single-stage service between points on Eastern's Denver-Memphis route and cities on Eastern's link from Memphis to the Southeast or Delta's routes southeast of Memphis.



FIRST TURBOJET AIRLINER AT END OF RECORD FLIGHT

Britain's new-powered Viscount transport made its first flight on 14 Oct. with 7000 mph and 3000 miles on the return trip. Previous test

powered transport flew the 214-mile route in 14 min. 7 sec. and was built by Vickers-Armstrong and is normally a 24-37 passenger plane.

four for the same was 15 min. The Viscount built at London airport after its flight on 14 Oct. with 7000 mph and 3000 miles on the return trip. Previous test

INDUSTRY OBSERVER

► Preliminary design data on the Lockheed NF54-1 is being studied by Navy Bureau of Aeronautics, and negotiations are under way for an experimental contract. The new craft uses both turbojet and propeller power and is designed for operations around the new 45,000-ft air base. It is a shoulder-wing monoplane and will be equipped with advanced anti-submarine warfare electronic equipment. It is not much larger than the well streamlined P3V Neptune but will have considerably improved performance.

► Northrop NF-57 two-seater, all weather fighter has been tracked under heavy canopy to Muroc Air Force Base, Calif., for preliminary ground tests with first test flight scheduled for middle of this month. The plane features side-by-side seating of two F-15 fighter engines in belly. Air frame of Northrop's X-4 scratch plane is complete and a meeting powerplant installation, which is behind schedule.

► Cadillac Ben, of Los Angeles, makers of GCA and search radar, are developing a new type of radar for use in directing airport ground traffic during periods of poor visibility. Both military and civil all-weather flying airports consider precise control of landing ground traffic, a must for completely all-weather air operations.

► International air freight shipments in Europe have dropped off rapidly since the acute Berlin situation. Exporters, who ordinarily have to wait two weeks for papers from European purchasers, find that they may find that might deliver before that two-week period, after shipment could build up moderately payment on their goods. So July, a bad month any way for overseas shipping, is even worse. Only carriers not feeling the drop are those engaged in the traffic of equipment and personnel from this country to the Berlin area.

► Port of New York Authority plan for acquisition of Tenthredo Air Terminal from Fred Wehner, present owner, is a shakedown. Negotiations are still going on, but no definite conclusion is expected within the month. Meanwhile, Tenthredo is intended in moving back across from Newark Airport to its site. Presently, Wehner had offered for sale, because of the flight career, the opportunity to purchase Tenthredo for \$3,900,000.

► Early detection of the post-construction bugs inherent in any new airplane may be anticipated for the Convair Conquest as a result of a two-month "shakedown" program just authorized by Western Air Lines. W.A.L.'s demonstration of San Diego-Salt Lake City-Las Vegas service, set for inauguration Sept. 1, was given last month with full load flights over the run with various aviation editors, news reporters, and airline commentators. The sample run produced a cruising speed of 365 mph, to which Western officials will adhere, at altitudes up to 16,000 ft.

High production left engine was carried by change of cylinder at terminal, mild engine disintegration at 16,000 ft. A heavy airframe lead and a cut of clean line flow, plane grounded at Oakland, at conclusion of test, by failure of left propeller shaft control-link lock sheared control motor, which was replaced in 15 min. after delivery of new motor.

Tired at close of two days of flight and ground refinements, test group showed no intention at plane's cabin could level, slightly high (as to best of jet test exhaust system). Convair extremely is developing first jet exhaust tube exhaust system, which is expected to deflect exhaust down one from behind.

Convair-Lines currently are flying with wing landing system tested. CAA requirement that the wings be opened every 100 hours for corrosion inspection of the system has led Convair to design a substitute heat exchange system for wing lock. Approval must be lower in this summer as soon as adequate wing clamps can be located.

Wood to Illinois

John W. Wood, a leading designer of airports, has been named as assistant professor of architecture at the University of Illinois.

During the war he was chief of the airport layout and safety unit, engineering and development branch of Air Force headquarters.

Author of many books on airport design, Wood was airport analyst for the Port of New York Authority from 1943-45.

AVIATION CALENDAR

- Aug. 10-11—Society of Automotive Engineers, West Coast meeting, Los Angeles, Calif. (Continued from page 10)
- Aug. 12-13—Aircraft Industries, Orange, Calif. (Continued from page 10)
- Aug. 14-15—International Aircraft Manufacturers Association, Los Angeles, Calif.
- Aug. 16-17—International Aircraft Manufacturers Association, Los Angeles, Calif.
- Aug. 18-19—International Aircraft Manufacturers Association, Los Angeles, Calif.
- Aug. 20-21—International Aircraft Manufacturers Association, Los Angeles, Calif.
- Aug. 22-23—International Aircraft Manufacturers Association, Los Angeles, Calif.
- Aug. 24-25—International Aircraft Manufacturers Association, Los Angeles, Calif.
- Aug. 26-27—International Aircraft Manufacturers Association, Los Angeles, Calif.
- Aug. 28-29—International Aircraft Manufacturers Association, Los Angeles, Calif.
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ENGINEERING & PRODUCTION

Production Progress Report

AIRCRAFT	Forecast	Actual	Percent	Forecast	Actual	Percent
January	200	180	90	200	180	90
February	200	180	90	200	180	90
March	200	180	90	200	180	90
April	200	180	90	200	180	90
May	200	180	90	200	180	90
June	200	180	90	200	180	90
July	200	180	90	200	180	90
August	200	180	90	200	180	90
September	200	180	90	200	180	90
October	200	180	90	200	180	90
November	200	180	90	200	180	90
December	200	180	90	200	180	90
Total	2000	1800	90	2000	1800	90

Actual production of military aircraft, by month, during 1947. (Data from Bureau of Aeronautics, Department of Defense, Washington, D.C.)

PERSONAL AIRCRAFT

AIRCRAFT	Forecast	Actual	Percent	Forecast	Actual	Percent
January	200	180	90	200	180	90
February	200	180	90	200	180	90
March	200	180	90	200	180	90
April	200	180	90	200	180	90
May	200	180	90	200	180	90
June	200	180	90	200	180	90
July	200	180	90	200	180	90
August	200	180	90	200	180	90
September	200	180	90	200	180	90
October	200	180	90	200	180	90
November	200	180	90	200	180	90
December	200	180	90	200	180	90
Total	2000	1800	90	2000	1800	90

Actual production of personal aircraft, by month, during 1947. (Data from Bureau of Aeronautics, Department of Defense, Washington, D.C.)

Reports Indicate Industry Upswing

Value of civilian airframe deliveries in May shows great gain over April as transport shipments rise.

By William Kruger

A modest upswing last week could see an upswing in the fortunes of the aircraft manufacturing industry. Latest government figures show civilian business in May well ahead of the preceding month, analysis goes on to say. The industry's sales are showing well ahead of last year, and some industry company reports once again are being passed.

The Census figures report that at the end of May the transport backlog had risen 283 planes (against 511 in April) better than 108 of these probably are Convair-Lines which are now moving to completion. At least 55 more should be Boeing Superfortresses. While deliveries on the latter will not begin until fall, the higher cost of these planes (about \$1,210,000) could take up any slack caused by the slowdown by the time of either transport deliveries to their purchasers.

The value of civilian deliveries up to

May of this year are nearly \$3 million less than for January-May period of 1947. This was due chiefly to lower personal plane sales—\$21,538,517 this year against \$31,216,269 last year. Another factor is the shift of construction work from aircraft plants to airlines and overhaul plants. At the Census Bureau reports only that construction work performed by plants producing complete aircraft, value of this type of work has increased by 10 percent compared to \$1,605,513 from \$1,370,000 in reported last year.

► Military Sales—The upswing in May sales reported by the Census Bureau does not added significance by the very accuracy of additional aircraft sales. The impression is strong that by the time military payments to manufacturers are running well ahead of last year. Some light on this may be shed later in the month when the Census Bureau is expected to issue annual statistical data including reference to military payments.

Meanwhile, Securities and Exchange Commission has announced that first-quarter sales of 35 aircraft and aircraft equipment manufacturers totaled \$79,512,000. This figure includes some military payments, as two manufacturers, Boeing and Convair, noted that because of long-term contracts so three-month figure could be taken as truly representative on their respective businesses.

This sales total for the first quarter of 1947 is compared to \$15,665,500 for the first quarter of 1947. Even the first-quarter 1946 total seems to be doubtful to arrive at an approximation of six months' income (and chances are that the second quarter is no better than the first) the industry would be well on its way to a six-month income. It is not out of all reality that military payments in the last six months will exceed those of the first half-year. The result would be a six-month income of \$100 million, and operating profits recorded in the aviation industry for the first time since 1945.

► Company Reports—Operating as well as net profits show an upswing to show up. Convair-Weiss and Republic have reported net profits of \$18,511,167 and \$4,126,665, respectively, for the first month ending June 30, and same firms in its with a new annual statement showing a \$11,327 operating profit, but a net loss of \$10,014. Martin later for the same month ending June 30 reported \$3,666,378.

► Aviation Industry—The responsible report (Martin later) shows \$19 million for the full year of 1947, the Martin plane still credited by back inventories in the 1947, ended at \$14,421,000 in of June 30. The industry's total sales for 1947 are \$31,000,000, and Dec. 31 to \$12,000,000, on June 30.

BRIEFING PRODUCTION NEWS

- B. F. Goodrich Co.** has developed a new type fiber woven of yarn which has been wrapped and heat-treated in a gas Atmos Eka for use in tires and fabric for basket seats, tie-down straps and other holders, and as upholstery and wall covering in the air transport field. The Fibrafil synthetic yarn is flame resistant and may be dyed any color or woven in plain or stripes.
- Texas Engineering and Manufacturing Co.** has received a contract for the rehabilitation of 95 fighter planes purchased recently by the Chinese government. The planes are 51 North American P-51s and 44 Republic P-47s. The contracts will extend into January, 1948. TEMA's backlog is now more than \$7,000,000 including C-54 overhaul and Martin 20-2 modifications.
- Stearns Aviation Corp.** has been awarded by Robert M. Steiner, former vice president engineering of Bell Aircraft, and his retained about \$100,000 in Navy contracts for the modification of electronic equipment. In addition, two additional government contracts are being negotiated. Stearns now has 22 on the payroll and is looking for suitable plant facilities in Buffalo. The staff is made up mainly of former Bell personnel, and also; Milo R. Swanson, helicopter engineer. Stearns will concentrate on guided missile research and hopes to enter the aircraft construction field at a later date.
- East Aviation, Inc.** is nearing completion of its jet plane trainer order as Air Force development contract. Edwin A. East, company president, states the new trainer is "the most advanced trainer ever built by the firm and is unique in its electronic, parametric, electrical and mechanical systems to synthesize all the conditions of air flight."
- Consolidated Valves Aircraft Corp.** delivered four Consolidators in the week ending July 11, the most so far delivered in a single week. American Airlines took three, Western Air Lines one. Later deliveries now include 40 American, 20 Pan American, seven Western, four Continental Air Lines one.
- Tuam Products, Inc.,** Los Angeles, has selected McCook, Ill., as site of its new plant. The plant will increase the company's production of specialized industrial cleaning compounds.
- Edo Corp.,** College Point, N. Y., has shipped 30 sets of model 2000 floats to the Argentine government for installation on Royal Super Catalina aircraft. The float Super Catalina will be used for civilian flight training purposes in Argentina.

Strike Report

Ryan workers back;
Douglas gives raises;
Boeing hiring slows.

One strike was ended, another was postponed, but a third dragged on as West Coast manufacturers last week looked over the labor situation.

The 41 day strike at Ryan Aircraft Co. of Glendale, Calif., ended when company and union (United Auto Workers) agreed on a wage increase averaging 30 cents an hour. The union originally had asked for a boost of 16 cents an hour, reducing this by steps in 9 cents and six paid holidays. The new agreement provides for four paid holidays, as did the old.

In an attempt to resume production, Ryan hired numerous workers during the strike. As the agreement talks

for ending the strike, the company will wind up with a payroll of about 1600 instead of its former total of about 1620.

Douglas Scatter-Douglas Aircraft Co.'s labor contract troubles ended when the UAW local for its Long Beach plant called off a strike and accepted a 10-cent-an-hour wage raise, and the International Association of Machinists local at the El Segundo plant postponed a strike scheduled for July 28.

The El Segundo workers, which average \$608 an hour plus plant's 6700 cc plan, decided that "indefinite progress" had been made on the negotiations to recent postponement of the strike. Discontent with an IAW local at the Santa Monica plant seems confirmed with hopes high of a strident battle next.

Boeing Still Out—But up at Seattle the situation is different. The Seattle cancellation of a National Labor Rela-

tions Board testimony that Boeing Airplane Co. be compelled to bargain with striking IAW workers has seemed to work against the company's plans to resume production.

Boeing had been according with a back-to-work campaign and second to be in sight of its goal of a 1,000,000 production line by Aug. 1 when the NLRB chairman's report came out. Last week, relations were off, and Boeing was still 2000 men short of its goal. Possible reason: fear of would-be workers that the union would win and force all employees based during the strike.

Following the outcome's economic distress, the union offered to end the strike and send the men back to work if the company would resume bargaining. Becoming refused, understanding that the union no longer is the proper bargaining agent, and that the workers have joined other unions, presumably the AFL, Teamsters.

USAF Orders 41 C-W Flight Simulators

Curtis-Wright's electronic flight simulator will soon be "thinking out loud" for Air Force pilot trainers, making it more likely that their noses and cockpit eyes are accurate.

An Air Force production order for 41 of the flight simulators (it is reported cost of "over \$2,000,000") is seen as the answer to a major complaint and has finally method of pilot training. Invented and developed by Dr. R. G. DeHaven, chief engineer of the electronics department of C-W's propeller division, the simulators resemble in theory the one currently used by the American Navy in basic flight training pilots (American Weekly, May 30).

Air Force simulators will be a modification of the North American T-6 (formerly designated AT-6).

That the Cost — Curtis-Wright President Guy Vaughan recently estimated that as a "training plane," the simulator "can handle four times the number of flight and ground hours at a tenth the cost and in a fraction of the time involved in the use of the actual airplane."

The Air Force became convinced of this after two prototype units of the simulators underwent evaluation testing by the Air Materiel Command and the Air Training Command.

Westinghouse Scores

Westinghouse Electric Corp. hit a record high of \$424,716.37 during the first six months of 1948, a seven per cent increase over the previous high of \$395,984.716 set in the same period of 1944. Not profit for the first half of 1948 amounted to \$24,941,104 equal to 5.73 per cent.

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control system failures, and reduce peak to 4 to 6 g. for instrument failure.

►For stability—importance equal to that of Magill's new assembly designed to give the Rotor-Craft inherent stability.

While Magill is limited in displaying in detail the elements of his approach to the stability problem, he is willing to show in a general manner the course he has pursued.

Feeding full flight tests of the prototype, one must consider the endurance of small hand-bushed controls as design studies of basic stability of the design.

The key to his line of stability is in placement of the C.G. of the complete helicopter at a distance approximately 40 percent to the rear of the rotor rotor shaft, thus ensuring a somewhat less or disk loading upon the forward rotor disk, the rear rotor.

Apparently, the tendency of Rotor-Craft much to return to horizontal as well as flight following the application of directional, lateral, or longitudinal loading from loads from a combination of moment disk loads with thrust of the C.P. thrust each disk is application of unbalancing forces.

Magill reports that during initial free flight model experiments in which disk loadings were observed, stability was little short of outstanding. Therefore, when he moved the faster C.G. forward "to see what might happen" the model displayed stability which prompted extensive research and final application of the principle to the full scale prototype.

The experimental craft shows moderate displacement of disk planes with relation to each other, adjusted by a sliding of the rear rotor drive shaft 4 deg. to the left from vertical. The designer indicates that this is done to offset rotor torque differences between the two rotors.

►Spins. Standard Parts-Pratt & Whitney model engine with two pistons 1300 lb. and has a disk loading of 2.5 lb./sq. ft. Disk diameter is approximately 18 in. and disk is a 1/2 in. thick. The engine is mounted in a fuselage 13 ft. 4 in. long, 10 in. diameter. Rear rotor is positioned above the forward. Engine is a 110 hp. 4-cyl. Continental C-100, modified to deliver 1300 rpm. Gearing gives a rotor speed of approximately 1/7 engine speed.

An interactive feature in the power plant area is the use of standard automobile tires wherever possible. Rotor shafts, mounted on a rubber disk support, are connected to a standard Ford wheel. In the suspension, a 3/4-in. 10-30 nut. End rotor drive rotor is a 3/4-in. 10-30 nut.

►Controls—All control is in a tail linkage. That pulls are constant in such a manner that directional control, and a single control stick addresses main

ing inadequate manual power.

At pilot's left is a lever serving as combined throttle and collective pitch control. In production models this lever will carry, additionally, either a small thumb lever or hand grip throttle, cyclic. Another lever, close to throttle lever is a manual disk brake, used for rotor pulling tests, and will not appear in a production version.

A characteristic of the craft is its winging, light control sensitivity. Rotor-Craft, vintage rotor pulled and tracking Rotor-Craft tests for air forces reports that not only are control movements exceptionally small but there is no undesirable lag in control response.

Development of the craft is on a basis that is a brief working of controls on the ground or just under lifting speed, and particularly noted in absence of loadings at forces into the control system.

A feature of the Rotor-Craft is the aerodynamic self-centering of controls. No spring centering of the control column is employed, yet the stick returns to center in a matter of seconds when released from any off-center position.

Aerodynamic balance of the craft is such that with the stick forward and controls neutral a moderate forward swing develops into it is in the air. Single lock pressure on the stick is required for turning.

►Undercarriage—Fowler-Tweedy landing gear system develops from the conventional in compliance with an unusual technique to keep main gear wheels ventral throughout all positions of travel which have landing configuration attached and travel through a large air stream limits of about 15-14-in. travel.

A light "photograph rail" carried from the oleo bell, outward and above the axle in a pivot about the bearing holding the wheel bell, pivot to the main axle makes vertical positioning of the wheel at all times.

All wheels are castoring, but those of the main gear are held rigid, for ease of ground landing. In view of this, a shock absorber is used in a strong rotor drive is introduced in a landing.

Magill reports that initial model tests attests to his own vision in such that cyclic control forms, and blade movements, are actually used in landing control, cyclic pitch changes do not exceed 1 deg. plus or minus. Free and self movement of the rotor rears cyclic pitch changes not exceeding 2 deg. plus or minus.

►Rotor Test Stand—Discussion of the Rotor-Craft would be incomplete without an explanation upon the manner in which the designer solved aerodynamic problems presented in his rigid rotor concept.

His proposed rotor system was without precedent, and he found on stand

test aspects of engineering data which could be used in determining the air side problems of the rotor. He had, therefore, and he has a mathematical calculations to support them, but no physical evidence that they were correct.

To prove his ideas he devised a rotor test stand for testing all forces applying to a 1/2 scale rotor assembly.

Mounted solidly upon a heavy four legged frame, the test rig mounts exactly half of a standard controlled rotor system during the rotor, a tail rotor and a system of spring loaded balancers. The stand carries an adjustable rotor hub cyclic and collective pitch controls and assembly control.

Development of all control forces are indicated as a full pitch, roll and yaw movements, and lift and side forces—the last in free air tests with the test stand carried as a track driven at varying speeds, as a smooth area.

Says Magill: "We know of no such group which provides any comparable rotor test stand. It has given us low cost proof of original theories on rigid rotor system, and has supplied data never before provided in rigid rotor research."

He is hopeful, but has no positive assurance that these tests can be proved without the 1/2 S. H. to offer an experimental production model control.

It is said that the aircraft is prepared with even modification of its engine for an attempted measure of conventional aircraft.

Magill tells Aviation Week he is convinced that a conventional model is now being built, comparable to other small helicopters now in the field, and he predicts to sell for \$10,000, and a production of 100 units, and that after this, the rotor can be sold down a considerable amount to \$5,000 for a complete model.

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The Constellation is flown by more commercial airlines than any other light-medium transport. It carries three times as many passengers across the North and South Atlantic as all other aircraft combined. It holds more than 100 speed and distance records (many of them non-stop even crossings). It is the first and only plane to operate around the world on a commercial route. It has been ordered and reordered by the airlines and the United States Government.

The Constellation has been tried and proven by more than three thousand national passenger airlines of commercial service.

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a. Is it necessary for the system to function automatically, or is it conceivable possible to achieve the maximum of desired requirements by manual operation of the system?

b. Analyze the cost, performance and weight of the three specified to give automatic function and compare with alternate stress which would permit manual control.

c. Analyze the system from a maintenance viewpoint, considering accessibility and possibility of grouping all functional items into one package.

d. The system must be segregated and over-all space requirements for the entire system determined.

Due to the methods through which these recommendations might be executed is for security considerations to require previous action experience by a portion of all new engineers hired.

In addition, engineers should be sent out to the various agencies involved to acquire firsthand knowledge of maintenance and service difficulties.

It is not considered enough to have professional "service engineers" available to the airlines for, valuable as they are in providing solutions to current problems, they probably do not exert sufficient influence on new designs. Engineers themselves must acquire firsthand knowledge of the airline problems if maximum utilization of airline experience is to be obtained.

Douglas Aircraft Co. put many of these recommendations into practice models in the design of the DC-9 model for modification on extensive service of airline service and maintenance recommendations and expanding respective status of airlines to a series of conferences during the preliminary design stage of the plane. Douglas presented a "quarterly conference" between the DC-9 and the DC-5 and DC-5 clubs to illustrate what can be accomplished through simplification of systems.

► **"Redesign"** **Conclusions**—One approach to the problem of simplification is the use of the "redesign" in which the components of a complicated system are mounted together on a common panel for repair, removal. When trouble develops the entire panel is easily replaced by another panel which has been tested and approved by the shop. The faulty panel can then be disassembled and repaired without delaying the operation of the plane. Although this system permits immediate replacement of the package it has proved more costly because of the necessity for smaller error panels rather than individual units having a high incidence of malfunctions.

"The TWA stock heater panel which showed an incidence of more than 5,000,000 while the individual heating system components required for

stock would have cost only about \$17,000. This is a \$75,000 penalty to avoid in general panel replacement of a unit.

There is no question but that the modern multi-engine transport is complex and that many thousands of items must fit together in its interior. A modern four-engine transport burns more gasoline in a single day than a coal-burner in a town of 45,000 people.

It is equipped with more instruments than 20 diesel locomotives.

Its wings enclose a structural frame much stronger than many bridges.

It is equipped with radio and electronic equipment which would consume literally tons of material in broadcasting station.

And all of this equipment must be enclosed in a very small space.

This complexity probably results from a combination of aircraft manufacturers, the airline and the government all working toward safety but each taking a slightly different (sometimes duplicating) path.

We have now passed into an era in which aircraft systems and not airplanes are structures, as the primary problem.

To date, accessories and operating systems have not always been completely developed prior to the delivery of airplanes. Bad system designs or malfunctions can ruin an otherwise good airplane. Each operating system must be developed and developed by tests put in service and completely as the structure.

There is general realization that a serious problem exists and that of the procedures outlined here can provide effective action in seeking a solution.

Ghost Approved

(McGraw-Hill World News)

LONDON—The Harland Ghost jet engine which is expected to revolutionize British civil aviation, has been officially approved by the Air Registration Board for use in civil transport aircraft.

The "Ghost" has been licensed for 3,500 lb thrust. But in its final state it will deliver 5,000 lb. It will power the new de Havilland Comet jetliner now being developed at Harlandshire aircraft for 900 mph service across the North Atlantic and other routes.

The Comet will have four Ghost jet engines. It is expected to make its first flight in 1953 and to make the crossing from London to New York, Montreal, in five and a half hours. The "Ghost" engine is a development of the existing "Goblin" used in British fighter aircraft. One of these new engines was installed recently in a de Havilland Vampire which broke the international altitude record.

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ANSUL CHEMICAL COMPANY
FIRE EXTINGUISHER DIVISION, MARINETTE, WISCONSIN
DISTRIBUTION IN ALL PRINCIPAL CITIES

During World War II, a P-51 Mustang, capable of withstanding service temperatures up to 140 deg. F, proved ample for U. S. service aircraft. But when rapid postwar aircraft development became accelerated and high-speed aircraft became a reality, it became necessary to provide aircraft blisters and canopies with a covering possessing high heat distortion resistance and ability to combat increased friction from moisture.

Rohm and Haas Co., Philadelphia, manufacturers of Plexiglas and Plexiglas products already had one answer in Plexiglas II, a heat resistant acrylic originally developed in 1939 for light piping in surgical instruments which were to be sterilized.

Most important characteristics of Plexiglas II already installed on the McDonnell Phantom and Thunder and approved for the Cessna 441Q are its ability to withstand service temperatures to 350°F, higher than regular Plexiglas. In addition, sanding, staining, coating and polishing operations are easier with the new Plexiglas II since its higher heat resistance makes it less sensitive to overheating during these operations.

Regula forcing apparatuses are used for the sty Phragmites, with the exception that forcing occurs on a constant 35 deg F hotter than for the other material. Parts which are to be dropped formed as an which melt-off is a serious consideration are heated in a somewhat cooler area than are used to draw Phragmites II into long sheets.

Using these higher turning temperatures, it is necessary to work **Flexigrip II** more rapidly in order to convert the forming before the material becomes too cool.

The new Pilegit has a tensile strength of 5000 psi, compared with a tensile strength of 3000 psi for regular Pilegit. In addition, Pilegit II has a heat distortion temperature (measured at 2 degrees Centigrade/min. at 164 psi) of 200 degrees C., compared to 75 degrees C. for regular Pilegit.

The Tern Co. has started a 40 per cent increase in its research laboratory facility at Boreas, N. Y. A new eight-story building will contain laboratories for analytical, laboratory and consultation studies. A chemistry building will contain 18 entire laboratories for the development of new laboratory. A third new building will provide of bio space.

Changes in top administrative personnel at Consolidated Value Added Corp., continue with the following recent resignations: Frank A. Lissman, manager of the San Diego division; David E. Faust, head of Canadian facilities; Ronald E. Hertz, assistant to the division manager; T. W. Stachurs, chief division engineer; H. S. Nakaya, quality manager; and J. L. Kelly, formerly San Diego regional manager.

President Robert J. Coker announced the appointment of Frank H. Harmon as assistant general manager in charge of production at the San Diego Division. Harmon was vice president-manufacturing of Ciba-Wyeth during the war.

[illegible]

Manufacturing Products, Inc., Cleveland, OH, selected Balluff's B5 Williams sensor as the

William Albrecht, Division, Inc., New York named Edward J. Brannock vice president technical services; was earlier manager of the Albrecht Division of Pacific Albrecht.

Buy One, Get One Supply. *Black, named*
D. W. Myers was compensated there pre-
viously was national president of Hall
Abroad Co.

The Navy Messing Furnace Co., Troy, N. Y. announced the achievement of R. L. ...

Florida Machinery Corp., Marion, Fla., supplied Walter W. Bishop, head of an enterprise in industrial estates and office buildings with various personal effects.

WIND ARMADILLO Co., 10000 E. 10th Ave., Suite 200, Denver, CO 80231, is a privately held company with 10 employees. The company is a subsidiary of Wind Armadillo Co., a privately held company with 10 employees. The company is a subsidiary of Wind Armadillo Co., a privately held company with 10 employees.

Byron Williams Co., N. H., announced that William A. Trivette, president, today announced that William Trivette Williams Co. has joined the company.

was broken by Arnold H. Davis, who was elected president of the company at a March 15 meeting in St. Louis. L. E. Ryan was elected first vice president of the Canadian company.

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Electromagnetic interference (EMI) is a significant problem in many applications, particularly in the automotive and aerospace industries. EMI can be caused by a variety of sources, including radio frequency (RF) signals, power lines, and electrical equipment. EMI can interfere with the operation of electronic systems, leading to data corruption, system crashes, and other problems. EMI shielding is a technique used to reduce the amount of EMI that enters or leaves a system. EMI shielding can be achieved by using conductive materials, such as metal, to create a barrier between the system and the external environment. EMI shielding can also be achieved by using non-conductive materials, such as carbon fiber, to absorb EMI. EMI shielding is an important consideration in the design of many electronic systems, and it is essential to understand the different types of EMI shielding and how to choose the right one for a given application.

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Key words: aging; cognition; memory; personality

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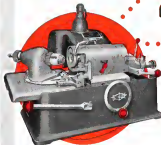
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SALES & SERVICE

New Air Taxi Service Organized

Fixed base operators set up feederline network to link small communities with large air terminals.

By Alexander McFarley

An air taxi network, organized among fixed base operators who are members of the National Aviation Trades Association, already has enrolled 432 operators and is expected to grow eventually to exceed 1000 operators.

Here, Merrill, NATA's executive director, and the new air taxi program was organized after planning conference sessions between NATA and Air Taxi Association, to provide standardized dependable air taxi service to all aviation communities from major airline terminal points.

► Operators Listed—First directory of the NATA air taxi program now being printed and due to be issued Sept. 1, lists 432 operators who have enrolled and also represent 347 communities, in 28 states and the District of Columbia. The area has a total population of 93,000,000.

In addition to providing a feeder service for the airlines, the NATA air taxi will provide emergency air service and service between all airline points as the individual operators have, facilities.

Airlines and other trunk-line transportation agencies will be able to use the directory to make advance arrangements for air transportation for passengers beyond their terminal points. In response, Merrill expects that the individual taxi operators will be able to find additional requests for reservations to the airlines.

It will make available better transportation for some communities which now have only very limited rail or bus facilities but which are potential sources of airline traffic, he points out.

► Insurance, Two-Place air being developed for a comprehensive ticket and insurance policy, covering the passenger while he is riding in the air taxi. Merrill has been conferring with several insurance underwriters on this part of the program. It is pointed out that many insurance policies cover the liability only when they are riding on scheduled airlines. The combination of two ticket and insurance would remedy this drawback, with top insurance available in some amounts for the passenger's protection.

Significant is the fact that only four of the 432 operators who have signed are in the large operator category, which means very roughly of 15,000 lbs. gross weight or more, or more than 1000 operators carrying 10,000 lbs. gross each in the proposed service.

This indicates that the vast majority of the taxi operators are not likely to be scheduled commuters but are small business operators and professionals will remain such.

All the taxi operators listed are NATA trainee chapter members who have valid operating certificates under FAR Part 42 and letters of authorization under several Sections 2911 of the GMR's provisions. Regulations authorizing operation in non-scheduled regular air carriers.

► More Direction—Private, local-hour classed by the first direction but directions will be published quarterly, beginning in January, and subsequently

editors are expected to include larger lists, eventually reaching approximately 1000 taxi services, Merrill reports.

Directions will be distributed to the taxi operators and through the scheduled airlines, with each directory bearing a detailed statement about the local service. Merrill has prepared a rubber stamp with a statement about the official AOC Air Taxi Service, as a model for member operators.

► Costs, Committee—A seven member air taxi committee will be charged with developing a code of standardized operating practices and rates for the air taxi system and will serve as a clearing house for grievances from the public and between operators.

Merrill expects that a considerable volume of additional business will be generated by cooperation between taxi operators in different localities who can arrange return loads for each other and save because which they can not be able to handle in other taxi services in the system.

► Rates Interregional—Problem of standardized rates is something that the NATA plan is investigating at first for the present. Air taxation of uniform rates in the nation would undoubtedly make it easier to further economic regulation by CAB, which is felt to be just another at least of the depression stage of the new system.



SALES RATE: \$6000 AN HOUR

What is perhaps a new high in fast-paced selling was rung up by John Cunningham of Cessna Aircraft Co., Charlotte, N. C., when he looked around for three Cessna 190s within a space of five hours on just

11. All the sales were in different customers. Delivering income at the sales is the 190 selling price \$15,750 for each of the Cessna in \$41,250 worth of income for the three of them in three hours.

A letter from M. F. Kellies, ATA vice president and secretary, to NATIA has outlined suggested requirements at such a gathering.

- Deluxe safety standards
- Minimum insurance protection for passengers
- Standards of service including charges
- Current directory of operators per territory, including equipment type, rates served etc.
- Expediting handling of reservations, cancellations and refunds
- Protection of passengers for failure of performance
- Protection and advancement of air play by air carriers and feed back operations

At the recent California Aviation Trades Association meeting, Rayford Therber, executive director of CATA, told delegates that the proposed two operations would be a new market for airlines and air charter operators making many prospective passengers who are too remote from airline travel, without lack a supplementary service.

"The so-called trade has actually arrived," Therber said. "One will be the real leader."

Bonanza Sells Autos

Oberlin Motor Co., Oberlin, Ohio, has a Bonair Bonanza it claims is as good as any airplane on the company's staff.

The red and ivory craft currently is being used by Jerry Jack and Albert Dryden to the automobile factory, and it is scheduled to be flown daily to take delivery on their newly purchased automobiles.



WHITTAKER'S TANDUM WHEELS

Act Whittaker, Portland, Ore., aircraft was an aviation, he developed the tandem wheeled landing gear on a Piper PA-11 and improved lightness performance on rough fields. Two wheels of the same size are mounted on each of the main landing gear legs with a large attachment to the wing and ribs. Brakes are on each wheel. Whittaker has been flying the device in landings and takeoffs for 40 hrs. and is

Rx: Mix Two Children, One Plane, Whoooping Cough

Extreme sensitivity of the airplane was demonstrated recently by the fact that a doctor's prescription in Midway, Tex., read in effect: no airplane ride.

The doctor recommended that two children suffering from whooping cough be taken up to 10,000 feet for about three minutes.

J. O. Wosnick, of Mustang Airport, Dallas, placed placemats and loaded the children and their father in his Cessna H. O. Wright four-seater at Dallas.

Back in Midway, the father said that the children were both definitely improved.

CAA Reports

On Civil Aircraft

Civil aircraft numbers of almost 15,000 per year is needed by the Civil Aeronautics Administration in its July statistical report.

Number of civil aircraft in the United States on July 1 was 14,315, compared with approximately 13,800 on the same date last year.

Civil aircraft production for May totaled 512, compared with 1646 for May, 1947.

• **Gratuities**—Approved gratitudes for student and private pilots showed a marked decrease. In May, 1948, 14,838 student pilot certificates were approved, compared with 18,791 for May, 1947. CAA approved 7926 private pilot certificates in May, 1948, against 9776 in May, 1947.

Civil Aircraft Tally

Aircraft recorded with CAA	
July 1	15,000
Civil Aircraft	14,315
Class I and under	10,000
Class II	4,000
Class III	1,000
Class IV	1,000
Class V	1,000
Class VI and over	75
Scheduled Air Carrier Aircraft	1,000
Total U. S. Civil Aircraft	14,315
(June 1)	13,800

Civil Aircraft by State

Alabama	1,000
Arizona	1,000
Arkansas	1,000
California	1,000
Colorado	1,000
Connecticut	1,000
Delaware	1,000
District of Columbia	1,000
Florida	1,000
Georgia	1,000
Idaho	1,000
Illinois	1,000
Indiana	1,000
Iowa	1,000
Kansas	1,000
Kentucky	1,000
Louisiana	1,000
Maine	1,000
Maryland	1,000
Massachusetts	1,000
Michigan	1,000
Minnesota	1,000
Mississippi	1,000
Missouri	1,000
Montana	1,000
Nebraska	1,000
New Hampshire	1,000
Nevada	1,000
New Jersey	1,000
New Mexico	1,000
New York	1,000
North Carolina	1,000
North Dakota	1,000
Ohio	1,000
Oklahoma	1,000
Oregon	1,000
Pennsylvania	1,000
Rhode Island	1,000
South Carolina	1,000
South Dakota	1,000
Tennessee	1,000
Texas	1,000
Utah	1,000
Vermont	1,000
Virginia	1,000
Washington	1,000
West Virginia	1,000
Wisconsin	1,000
Wyoming	1,000

Federal Airport Grants Total \$89

Fifty-eight local sponsors under the Federal Airport Aid Program received \$8,816,000 in Federal funds from June 15-July 15, bringing the overall number of grants to 339 airports for a total of \$45,086,000.

Large single grant during the June 15-July 15 period was \$487,943 to Dallas, Tex., for the construction work on Fairbanks Airport.

Latest Civil Aeronautics Administration tabulation on the overall progress of the report program shows 30 projects 100 percent completed against 15 the previous month. Fifty projects are between 66-99 percent completed against 15 the previous month.

• **Construction**—Of the 339 grant offers to date, 108 are for construction or improvement of Class I airports, 95 for Class II fields, 118 for Class III fields and 76 for the building or development of Class IV, large, multi-use airports.

A total of 537 local sponsor agencies are known to have matching funds 100 percent available.

Other large grants during the same period include Rochester, N. Y., \$400,000; Lowell, Mass., \$370,000; and Dallas, Tex., \$374,538, all Airports (CA) Municipal Airport, \$706,594.

Trade Group Officers

Robert S. Harrington, vice president of Piedmont Airlines, Inc., Winston-Salem, N. C., was elected president of the North Carolina Aviation Trades Association at a recent meeting in Raleigh. Other officers named were Clay Brown, president, N. C. Air Club Service, vice president, and Bob Law of Fayetteville (N. C.) Air Service, secretary-treasurer.

The 44-day session included a discussion on U. S. flight training led by Harry Moffett, National Aviation Trades Association executive director, and other talks by Beverly Hewitt, NATIA president, and Tom Davis, president of Piedmont Airlines. Keynote and retiring board chairman of the North Carolina aviation group, John Tresselt of Cannon Aviation, Inc., Hickory, N. C., is retiring president, and named Davis as board chairman.

Airport Aid Urged

Congress was petitioned by the American Roadbuilders Association to appropriate the full \$108,000,000 in aid expenditures for Federal aid to airport development authorized by the Federal Airport Act in a resolution at the ARA annual convention in Chicago, July 15-21.

BRIEFING FOR DEALERS & DISTRIBUTORS

PRODUCTION CROSSWIND GEAR—Goodman Turb & Robert Co. has shipped its first production crosswind gear for light airplanes to Cessna Airplane Co. at Wichita, Kan. Richardson, manager of the Amesbury products division has announced.

The device was made almost simultaneously with the presentation at Midwest Airport of a CAA-approved type certificate for the larger Goodwin crosswind wheel installation on a Douglas DC-3. The certificate was received by T. A. Kneeling, vice president and general manager of Goodwin Aircraft Corp., from H. Lloyd Child, assistant to the CAA administrator who has been in charge of the crosswind gear development for CAA.

Cessna has announced list prices of \$140 for factory installation of the crosswind gear on new air planes, and \$470 for enlargement in the field. Articles shipped to Cessna contain the entering mechanism within the hub of a 6 ft by 6 in. airplane wheels. The crosswind gear on the DC-3 contains a larger mechanism in the hub of a 17.5 ft by 16 in. wheel. Goodwin anticipates that other light airplane manufacturers will soon announce availability of crosswind wheels in optional equipment on their planes.

VETERANS' AFFIDAVITS—New Jersey Aviation Trades Association is collecting affidavits from veterans who are being "discriminated" by the Veterans' Administration from being flight training. NATIA officials claim that "occasional" guidance by the Veterans' Administration would be enough to permit people very from flight training, stating that such action would be unwarranted, in opposition to the intent expressed by Congress to allow veterans to first courses of their own choosing, including vocational flight training. Affidavits may be used as assurance in legal proceedings to obtain VFA "discrimination" benefits.

BIPLANE GOODYEAR ENTRY—Out at Dallas Airport near Dayton, Texas, Goodyear, mechanic at the airport, is assembling a biplane entry for the Goodyear trophy and air show at Cleveland, Ohio, at the airport on Labor Day week end. Plane will have a 15 ft. span wing and 13-14 ft. lower wing.

Dickson expects to get sharper than most with the highest than his monoplane competitors, and his calculations show the plane should be between 275 mph and 280 mph. After running fast tests at Dallas Airport, Dickson in August, he will make his first flight tests at Richmond, Ind., airport.

McCauley Propeller Corp., also of Dayton, is designing a special propeller for the Dickson entry, which, like all the other 100 planes being entered for the rugged competition, will use an 85-hp Continental engine.

TRAINING DECLINE REFLECTED—A total of 14,839 student pilot certificates issued by CAA in May, 1948, reflected a marked decline from the 18,791 issued in the same month in 1947. Corresponding decline was shown in private pilot certificates, to 7926 from 9776, and instructor certificates, to 764 from 1290. Flight instructor ratings, to 423 from 765, and instrument ratings, to 146 from 237. Only increase was in commercial pilot certificates which showed up to 764 for May, 1948, as compared to 527 for May, 1947.

OHIO FARMER PROGRAM—Ohio Association of Flying Farmers seeking money of Columbus department of a two-week program calling for state financing for landing strips for all communities. Through a special aviation fund to be created by the Ohio General Assembly, money for the fund is to be derived from aviation gasoline tax, and the program calls for a landing strip for each of the 100,000 farmers to be established for personal property tax on airplanes which is the present Ohio practice.

TAILORCRAFT DELIVERY FLIGHTS—L. W. (Ray) Robert, Vancouver, Wash., airplane distributor, told delivery of the first 1949 Tailorcraft Model 85 recently at his base in Alhambra, Calif., along with a 1949 Tailorcraft de Havilland 65, flown by an associate. Robert told delivery on the first 48-hp. Tailorcraft Model A in 1937 and flew a heck in Vancouver. Second Model 85 was flown by C. W. Millard of Toronto, Ontario.

—ALEXANDER NEWBERRY

AIR TRANSPORT

Plane Development Bill Fought

Manufacturers, fearing extensive damage to sales hopes for present transport types, seek to amend or delay measure.

Industry-sponsored Senators and two newly appointed Senators found a tenuous battleline of opposition to legislation authorizing the government to finance developmental costs on new transport types and cargo prototypes.

The Senate was still set to approve the bill at the second session. It previously had passed the House and two travel hearings before a Senate committee. If the measure cleared the Senate quickly, planning could be done by the end of the year and the new Congress convening in January could make appropriate changes to get the program going.

► **Federal Question:** What controlling authority now has made the proposed law necessary? Hawaii, Martin's C-130, Sen. Owen Roemer who heads the former Congressional Aviation Policy Panel and sponsored the legislation, did

not mean in his intention to push it through the special session.

In the talks of those against the bill there was general agreement on the theoretical principle that the government should promote commercial air transport in the use of national defense through Federal aid stimulation of prototype development.

► **Opposition Form:** Industry objection to the measure, led by Glenn L. Martin Co. and Consolidated Vultee, appeared to be motivated by the manufacturer's claim that the present of rapid transport and cargo types in three to the year would cause airlines to forgo production of types now on the market including the C-130 and Consolidated Vultee, C-124. Consolidated has extended its total revenues to \$46,000,000. The development costs on the C-124 covered

serious financial difficulties for the Martin company. A Reconstruction Finance Corporation loan aided Martin. An amendment opening the way for large-scale purchases of airlines was on the market as soon as the bill a coauthor—and before prototypes have been developed under it—was proposed by Martin. The amendment would insert the words "and facilitate the purchase by airlines of existing types of aircraft" in a provision of the bill, making it read:

It is hereby declared to be the policy of the Congress that in the interest of national security the Federal government should promote the employment in an economic and to large numbers as possible of more efficient transport and cargo aircraft, and to this end, support design, development, testing, building, construction, service training, and modification of prototype transport and cargo aircraft and facilitate the purchase by airlines of existing types of aircraft, intended primarily for commercial use, and suitable also for auxiliary military service.

► **Paul Dies Respected:** Senator James H. Doolittle on the Martin proposal, interpreting it as the current "proof" design under which the Air Force would have plans for a military cargo transport and three or four types of cargo transport. This was put forth last year by the Air Transport Association in testimony before the President's Air Policy Commission. Both the President's Commission and the Congressional Aviation Policy Board rejected the proposal and we cannot expect Congress to adopt it," Roemer commented.

An amendment proposed by Consolidated Vultee would require that the government's main development program would interfere with current transport sales. "Type development under it will not be made by the firm to five years. It existing types of transport have not been sold by the firm, they must wait."

► **AMA Fears Speculation:** Roemer introduced an amendment stating that a government prototype development program would interfere with current transport sales. "Type development under it will not be made by the firm to five years. It existing types of transport have not been sold by the firm, they must wait."

In addition to Martin and Consolidated Vultee, there was increasing opposition over the prototype bill in the ranks of the Aircraft Industries Association. The association is a major force in the industry. Manufacturers pointed out it would virtually wipe out private enterprise development of commercial aircraft and leave the industry under rigid government regulation.

► **Peace Delivered:** Under the measure, the Secretary for Air is authorized to set the sales price in all plants under quarterly manufactured from private aircraft-developed prototypes. The Secretary is also directed to work out a plan for recycling government development money.

Another link between the ideal story and the bill S. will be forged by Northwest Airlines, which has just received a five-year CAB certificate to operate from Seattle-Tacoma, Wash., to Portland, Ore. to Honolulu, Hawaii.

Seattle opposition was led by Chairman Chas. G. (Chas.) S. Dole of the Armed Services Committee. He was led by the aid of the committee of his committee, led by Sen. Henry Byrd (D., Va.) and Sen. Everett Schmitt (R., Minn.). Sen. John Williams (R., Del.), who blocked passage of the measure, led by the regular session, intended to oppose it. Sen. Claude Pepper (D., Fla.) also blocked passage because he was not familiar with the measure's intent, but with down his opposition.

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Hawaiian Service Goes to NWA

Importance of linking Pacific Northwest to Hawaii is deciding factor in CAB award of new route.

Hawaii has attracted new prominence as central corridor of the Pacific Ocean.

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the Orient. He and that if the bill was granted to Pan Am, it would become an integral part of that carrier's routes, appearing through service from the Pacific Northwest to San Antonio in connection with Alaska Airlines with Pacific Airlines. Pan Am's development of the island would be substantially less than Northwest's, according to Roemer.

► **Route Value Doubled:** Expressions of doubt that a Pacific Northwest line was so route. It would be authorized for the carrier from several quarters. United Air Lines President W. A. Taft Jr. has reportedly taken a due note of the bill. And last summer a CAB committee recommended against certifying the route because of high fuel costs required and low traffic potential.

The committee's report stirred hot protests from business and civic leaders in the Northwest area. CAB is authorizing the operation of the annual traffic potential at between 1000 and 3000 passengers.

► **Tide Gauge:** Growth of the UAG and PAA routes between California and Hawaii undoubtedly had caused trouble either on CAB's decision to certify the route. Growth of air traffic between the mainland and the territory has been so great that the continued expansion of prototype development is necessary.

Pan American Airlines inaugurated U. S. Hawaii service in 1937, carrying 206 passengers during the year—its first year of service. During 1947 PAA carried 10,000 passengers. The annual growth of the Hawaiian route averaged only 10,000 for the year—its first year of service.

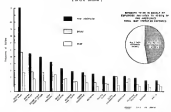
Pioneer Reports Profit

The first certified U. S. air carrier to report Hawaii profits for the first half of 1948 signed into the black.

Pioneer Air Lines signed into the black. Pioneer Air Lines signed into the black. Pioneer Air Lines signed into the black. Pioneer Air Lines signed into the black. Pioneer Air Lines signed into the black.

► **Profit:** Pioneer Air Lines signed into the black. Pioneer Air Lines signed into the black. Pioneer Air Lines signed into the black. Pioneer Air Lines signed into the black. Pioneer Air Lines signed into the black.

COMPARISON BY JOB CLASSIFICATION OF ANNUAL WAGE SCALES FOR PAN AMERICAN, BOAC AND KLM
(in U.S. dollars)



PAA CONTRASTS PAY SCALES

Pan American Airways, which is fighting for domestic routes in the Atlantic, is in a position to report Hawaii profits for the first half of 1948 signed into the black.

while the comparable position with the government from pay between \$600 and \$2,000 per year. PAA's staff members are paid between \$750 and \$2,000, while airline personnel employed by British and Dutch airlines receive between \$1,200 and \$2,000. In practically all personnel positions are paid well above the government comparable to those paid by American airlines.

From bridges to brides...

Bonanza travel pays



Mr. F. C. Russell, President

The F. C. Russell Co. operates a Beechcraft fleet (two Bonanzas, one 9-place Beechcraft) for these paying reasons: "comfort, convenience, economy, conservation of executive time." This Cleveland company makes all-metal combination awnings, and similar products; has nation-wide sales pattern. Says Mr. Russell: "Now I keep in personal touch with the field, hitherto impossible by ordinary travel methods."

Visiting jobs in three states during one day by 4-place Bonanza is not unusual for key men of Megarry Brothers, bridge and road builders of the Northwest. "Delays from breakdowns are cut to hours by flying our men and parts direct to job," they say. "One superintendent covers several jobs rather than one, as formerly." Economical—operating costs can reach as low as 1¢ per passenger mile.



Honeymooners who buy their ring from Mack Lowry, the "flying jeweler" of Akron, Ohio, get a 300-mile wedding trip in his Bonanza—free. "Merchandising gold mine," says Mr. Lowry. "I use my Bonanza to fly customers to Cleveland wholesale houses for merchandise inspection. Owning this fast, comfortable Bonanza pays off!"

Apply Bonanza Transportation to your business

Want to put to profitable use the time you ordinarily waste in business travel? Company ownership of the Bonanza lets you do just that.

A note on your company letterhead will bring an informative 60-page brochure on "The Air Fleet of American Business."

Write today to Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

Top speed, 184 mph
Cruising speed, 172 mph
Range, 750 miles

BEECHCRAFT

BONANZA

MODEL 35

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS